

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections and further examination are requested. Upon entry of this amendment, claim 1 is amended, leaving claims 1-3 and 5 pending with claim 1 being independent. No new matter has been added.

Rejections Under 35 U.S.C. §102(b)

Claim 1 has been rejected under 35 U.S.C. § 102(b) as being anticipated by NEC IC Microcomputer System Ltd. (JP 60-176569).

Applicants submit that the claims as now pending are allowable over the cited prior art. Specifically, amended independent claim 1 recites a circuit board including chip components mounted thereon, the circuit board comprising a reinforcing resin configured to cover junctions between plural first chip components and a third chip component on a substrate, wherein a first chip component and a second chip component have substantially a same height on the substrate, and the third chip component is bonded by a first electrode coming into direct contact with an electrode of the first chip component and is bonded by a second electrode coming into direct contact with an electrode of the second chip component such that a longitudinal axis of the third chip component is arranged orthogonally to a longitudinal axis of each of the first chip component and the second chip component, and the plural first chip components and said third chip component are passive devices.

The cited prior art fails to disclose or render obvious such a circuit board. In particular, NEC, as shown in Figs. 7-9, discloses terminal electrodes 2a', 2b' having areas that are wider in comparison with those of electrodes 12a, 12b, 2a, 2b of the chip components 10, 11 between the electrode 12a and the electrode 2a and between the electrode 12b and the electrode 2b. That is, facing electrodes 12a-2a and 12b-2b are connected via the wider terminal electrodes 2a', 2b'. Due to the wider terminal electrodes 2a', 2b', the construction in NEC can be firm and stable electrically without using a reinforcing resin.

In contrast, as recited in claim 1 of the present invention, the first electrode and the second electrode of the third chip component come into direct contact with the electrode of the first chip component and the electrode of the second chip component. In such a structure, contact areas between the respective electrodes are narrower compared with the structure of the NEC

device. Thus, if there was no additional structure, circuit board construction of the present invention may have an unstable design. However, to eliminate such instability, as recited in claim 1, a reinforcing resin covers junctions between the plural first chip components and the third chip component. Thus, the reinforcing resin can ensure the stability of the junctions with the narrower connected portions as mentioned above.

Additionally, NEC fails to disclose that the third chip component is bonded by the first electrode coming into direct contact with an electrode of the first chip component and is bonded by the second electrode coming into direct contact with an electrode of the second chip component such that a longitudinal axis of the third chip component is arranged orthogonally to a longitudinal axis of each of the first chip component and the second chip component.

Moreover, any modification of NEC to render claim 1 obvious would have involved improper hindsight. Therefore, Applicants submit that independent claim 1 and its dependent claims are allowable over the cited prior art.

Rejections Under 35 U.S.C. §103(a)

Claim 2 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over NEC.

Applicants submit that claim 2 is allowable for the reasons set forth above, since claim 2 is dependent from claim 1.

Claims 3-5 have been rejected under 35 U.S.C. §103(a) as being unpatentable over NEC in view of Toyosawa (U.S. 2001/0054751).

As recognized by the Examiner, NEC fails to disclose or render obvious a reinforcing resin configured to cover junctions between the plural first chip components and the third chip component on the substrate, as recited independent claim 5 and now recited in amended independent claim 1. For this element, the Examiner relies on Toyosawa.

While arguably Toyosawa may disclose a resin, in a conventional type mounting for chip components (such as resistors and capacitors), use of a reinforcing resin in mounting for stacking plural chip components in a vertical direction is not necessary because construction in which the chip components are mounted on a substrate in a single layer can be stable electrically and have sufficient strength.

Additionally, in Toyosawa, as shown in Fig. 1, the first semiconductor chip 11 and the

second semiconductor chip 12 are connected with the inner leads 24, 25 sandwiched between the bump 13 of the first semiconductor chip 11 and the bump 14 of the second semiconductor chip 12. In other words, the structure of the Toyosawa device is the same as that of the NEC, and is thus distinct from the structure of the present invention, as recited in the independent claims. That is, the structure of the present invention, as recited in claims 1 and 5, is distinct from the cited prior art, because, although the reinforcing resin is not necessary in the conventional type mounting for chip components, in the present invention, as recited in claims 1 and 5, the reinforcing resin is used to ensure the stability of the junctions with the narrower connected portions, due to "direct contact" without using the wider terminal electrodes 2a', 2b' and the wider inner leads 24, 25. In other words, since the construction of the present invention does not include wider terminal electrodes, such as 2a', 2b' of NEC, nor inner leads, such as 24, 25 of Toyosawa, the present invention provides another member for ensuring the stability of the junctions, i.e., the reinforcing resin. Moreover, there is no reasoning in the prior art to modify the cited prior art such that the cited prior art alone or in combination renders obvious the claims of the present application.

Further, the reinforcing resin, as recited in the claims of the present application, covers and strengthens the construction of stacking plural chip components in the vertical direction. The cited prior art fails to disclose or render obvious such a structure.

Conclusion

In view of the foregoing amendments and remarks, all of the claims now pending in this application are believed to be in condition for allowance. Reconsideration and favorable action are respectfully solicited.

Should the Examiner believe there are any remaining issues that must be resolved before this application can be allowed, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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